On the Beta- and Gamma-Spectrum of Cs^{13}

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3. On the Beta- and Gamma-Spectrum of Cs^{137}

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Using the double coil, thin lens magnetic beta-ray spectrometer, we measured the beta and gamma spectrum of Cs^{137}. As the shape of its spectrum was accurately known (H.M.Agnew and H.I.Anderson, *Rev.Sci.Inst.* **20**, 873 (1949)), we studied the Kurie-plots of the 518 kev beta-rays and the effect of the internal L-conversion line on the value of the internal conversion coefficient of 665 kev gamma-rays.

The source used was the Cesium chloride of 0.1mc. intensity deposited on a Zapon film of about 20 μg·/cm.^{2} in thickness. The detector used was an end-window type G-M counter whose mica window was 2.9 mg·/cm.^{2} in thickness. We could resolve the internal L-conversion line of 665 kev gamma-rays, after we sputtered the aluminium of about 0.3 mm. thickness on the brass helical baffle in the spectrometer. We studied the Kurie-plots of the 518 kev beta-rays, using the correction factors (a) and (c) of Langer and Price (*Phys. Rev.* **76**, 641 (1949)).;

first forbidden; $a\sim(w^2-1)+(w_0-w)^2$, $\Delta j=\pm 2$, *parity change, yes.*

second forbidden; $c\sim 3(w^2-1)^2+3(w_0-w)^4+10(w^2-1)\ (w_0-w)^2$, $\Delta j=\pm 2$, *parity chenge, no.*

The Kurie-plot with the correction factor of (a) was on a straight line, where w_0 was 2.04. The influence of the thickness of the mica window was corrected by this straight Kurie-plot of the first forbidden. The ratio of corrected area of 518 kev beta-rays and the area of internal K-conversion line was estimated as 5720 mm^2 /545 mm.^{2} = 0.095. This value of the internal conversion coefficient corresponded to that of the former author (M.A.Waggon: *Phys, Rev.* **82**, 906 (1951)). But the ratio of the area of L and K line was 12 percent. There seems to be some obscureness in the separation of K and L lines.

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4. On the Reaction of O^{16} by Fast Neutrons. (I)

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The resonances in the reactions of O^{16}